REMARKS/ARGUMENTS

In view of the claim amendments above and the remarks and arguments below, Applicant believes the pending application is in condition for allowance.

I. Status of the Claims

Claims 1-24 were previously pending.

Claims 2, 3, 5, and 11-24 are canceled in this Amendment without prejudice to or disclaimer of the subject matter contained therein.

Claim 1 is amended in this Amendment as follows.

Claim 1 is amended to clarify that the term "80%" means "80 area% as measured by high performance liquid chromatography at UV 254 nm." Support for the amendment can be found, for example, in the Specification of record[1] on page 48, lines 11-12, and on page 50, lines 15-16. No new matter is introduced by the amendment.

Claim 1 is also amended to specify the choice of each of the variables R_1 to R_8 in formula (1) to be a hydrogen atom, without prejudice to or disclaimer of the subject matter eliminated thereby. No new matter is introduced by the amendment.

Claim 1 is further amended to recite that "the curing agent (D) includes a compound represented by formula (2): . . . wherein R_9 to R_{16} each independently represents a hydrogen atom, and the content of the compound in the curing agent (D) is not less than 60 mole percent." Support for the amendment can be found, for example, in the canceled claim 3. No new matter is introduced by the amendment.

Claim 1 is further amended to recite that "the curing agent (D) has an epoxy equivalent of 155 to 180 g/equivalent and a light transmittance at 400 nm of not less than 10% in a 1 weight

[1] Applicant respectfully submits that the Specification currently of record is the clean copy of a substitute specification that was filed with a First Preliminary Amendment on August 8, 2006.

percent methyl ethyl ketone solution." Support for the amendment can be found, for example, in the Specification of record on page 39, lines 7-13, and in the canceled claims 2 and 5. No new matter is introduced by the amendment.

Upon entry of this Amendment, claims 1, 4, and 6-10 are pending and at issue.

II. Rejection of Claims 1-24 under 35 U.S.C. § 112, ¶ 2

Claims 1-24 are rejected under 35 U.S.C. § 112, ¶ 2, as indefinite. The Examiner states that in the claim element "containing not less than 80% of a tetraphenylethane derivative" recited in claim 1, it is unclear what the unit of measurement is of the percentage.[2] Applicant appreciatively thanks Examiner Treidl for pointing out this informality.

In response, Applicant has amended claim 1 so that the claim element at issue now recites "containing not less than 80 area% as measured by high performance liquid chromatography at UV 254 nm of a tetraphenylethane derivative." The remaining pending claims 4 and 6-10 depend from claim 1.

Accordingly, Applicant respectfully submits that claims 1, 4, and 6-10 are no longer indefinite, and respectfully requests that the rejection of claims 1, 4, and 6-10 under 35 U.S.C. § 112, ¶ 2, be withdrawn.

Claims 2, 3, 5, and 11-24 have been canceled, rendering the rejection of these claims moot.

III. Rejection of Claims 1-5, 8-12, 15-19, and 22-24 under 35 U.S.C. § 102(b) over Rowe

Claims 1-5, 8-12, 15-19, and 22-24 are rejected under 35 U.S.C. § 102(b) as anticipated by United States Patent No. 4,447,512 to Rowe et al. ("Rowe").[3] The Examiner states that Rowe discloses all the elements recited in these claims. Applicant respectfully traverses the rejection.

[2] Non-Final Office Action dated April 16, 2008, page 2, last paragraph.

[3] Non-Final Office Action dated April 16, 2008, page 3, lines 8-9.

Rowe teaches a radiation- and aqueous alkali-sensitive, negative-working composition that contains: (A) a radiation-polymerizable compound, which is disclosed to be an O-epoxyalkylated phenolic resin or its ester product with an organic acid; and (B) a radiation- and aqueous alkali-sensitive component, exemplified by a diazonium compound.[4] As an example of the O-epoxyalkylated phenolic resin, Rowe discloses Epon 1031 (which is the name of a commercially available resin based on 1,1,2,2-tetrakis[(2,3-epoxypropoxy)phenyl]ethane).[5] The document titled "Hexion, Technical Data Sheet, EPON™ Resin 1031" provided by the Examiner in the outstanding Office Action discloses that the epoxy equivalent of Epon 1031 is 195-230 g/equivalent.[6,7]

On the other hand, claim 1 as amended recites that "the curing agent (D) has an epoxy equivalent of 155 to 180 g/equivalent." Rowe does not disclose this element.

The theoretical epoxy equivalent of a compound is calculated by the formula (molecular weight)/(number of epoxy groups), which comes out to be 155 g/equivalent for 1,1,2,2-tetrakis[(2,3-epoxypropoxy)phenyl]ethane. Since Epon 1031 has an epoxy equivalent of 195-230 g/equivalent, Epon 1031 contains components other than 1,1,2,2-tetrakis[(2,3-epoxypropoxy)phenyl]ethane, and the purity of 1,1,2,2-tetrakis[(2,3-epoxypropoxy)phenyl]ethane contained in Epon 1031 is lower than that for the curing agent recited in claim 1, whose epoxy equivalent is 155-180 g/equivalent.

At least for this reason, Rowe does not disclose all the elements recited in claim 1. Accordingly, Applicant respectfully submits that Rowe does not anticipate claim 1, and respectfully requests that the rejection of claim 1 based on Rowe be withdrawn.

Claims 4 and 8-10 depend from claim 1. Therefore, at least for the same reason as stated above for claim 1, Rowe does not disclose all the elements recited in these claims. Accordingly, Applicant respectfully submits that Rowe does not anticipate claims 4 and 8-10, and respectfully requests that the rejection of claims 4 and 8-10 based on Rowe be withdrawn.

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[4] Rowe, column 3, line 61, through column 4, line 63.

[5] Rowe, column 3, lines 15-19.

[6] Hexion, Technical Data Sheet, EPON™ Resin 1031, page 1, the first line of the section tilted "Typical Properties."

[7] Rowe discloses the epoxy equivalent of Epon 1031 to be 210-240 g/equivalent. Rowe, column 3, line 18.

Claims 2, 3, 5, 11, 12, 15-19, and 22-24 have been canceled, rendering the rejection of these claims moot.

IV. Rejection of Claims 1-3, 5, 6, 8-10, 12, 13, 15-17, 19, 20, and 22-24 under 35 U.S.C. § 102(b) over Nojima

Claims 1-3, 5, 6, 8-10, 12, 13, 15-17, 19, 20, and 22-24 are rejected under 35 U.S.C. § 102(b) as anticipated by United States Patent No. 6,399,277 to Nojima et al. ("Nojima").[8] The Examiner states that Nojima discloses all the elements recited in these claims. Applicant respectfully traverses the rejection.

Nojima teaches a photopolymerizable thermosetting resin composition that contains: (A) a mixture of an active energy ray-setting resin and a photosensitive prepolymer; (B) a diluent; (C) a photopolymerization initiator; (D) a setting adhesion-imparting agent; and (E) an epoxy group-containing compound.[9] As an example of the epoxy group-containing compound, Nojima discloses YDG-414.[10] As disclosed in the present Specification, YDG 414 "has a very high absorbance at 400 nm or less (i.e., a light transmittance of 0.0% in a 0.1 weight percent methyl ethyl ketone solution)."[11] Thus, YDG 414 should also have a light transmittance at 400 nm of 0.0% in a higher concentration of 1 weight percent methyl ethyl ketone solution.

On the other hand, claim 1 as amended recites that "the curing agent (D) has . . . a light transmittance at 400 nm of not less than 10% in a 1 weight percent methyl ethyl ketone solution." Nojima does not disclose this element. While YDG 414 may contain 1,1,2,2-tetrakis[(2,3-epoxypropoxy)phenyl]ethane, its lack of light transmittance at 400 nm shows that YDG 414, like Epon 1031 above, contains components other than 1,1,2,2-tetrakis[(2,3-epoxypropoxy)phenyl]ethane.

[8] Non-Final Office Action dated April 16, 2008, page 5, last paragraph.

[9] Nojima, column 4, lines 26-64.

[10] Nojima, column 14, line 20.

[11] Specification of record, page 40, lines 11-17.

At least for this reason, Nojima does not disclose all the elements recited in claim 1. Accordingly, Applicant respectfully submits that Nojima does not anticipate claim 1, and respectfully requests that the rejection of claim 1 based on Nojima be withdrawn.

Claims 6 and 8-10 depend from claim 1. Therefore, at least for the same reason as stated above for claim 1, Nojima does not disclose all the elements recited in these claims. Accordingly, Applicant respectfully submits that Nojima does not anticipate claims 6 and 8-10, and respectfully requests that the rejection of claims 6 and 8-10 based on Nojima be withdrawn.

Claims 2, 3, 5, 12, 13, 15-17, 19, 20, and 22-24 have been canceled, rendering the rejection of these claims moot.

V. Rejection of Claims 1-5, 7-12, 14-19, and 21-24 under 35 U.S.C. § 103(a) over Tanaka in view of Rowe

Claims 1-5, 7-12, 14-19, and 21-24 are rejected under 35 U.S.C. § 103(a) as unpatentable over International Patent Application Publication No. WO 02/094904 A1 by Tanaka et al. ("Tanaka") in view of Rowe above.[12] The Examiner states that Tanaka in combination with Rowe renders the claims obvious. Applicant respectfully traverses the rejection.

The Examiner contends that it would have been obvious to one of ordinary skill in the art at the time of the present invention to use the curing agent disclosed in Rowe, that is, 1,1,2,2-tetrakis[(2,3-epoxypropoxy)phenyl]ethane in the form of commercially available Epon 1031, in place of the epoxy curing agent disclosed in Tanaka.[13] As discussed above in Section III, however, Rowe discloses only low-purity 1,1,2,2-tetrakis[(2,3-epoxypropoxy)phenyl]ethane, not the curing agent of high purity recited in claim 1. Therefore, Tanaka and Rowe, either alone or in combination, do not disclose all the elements recited in claim 1.

[12] Non-Final Office Action dated April 16, 2008, page 9, lines 3-5.

[13] Non-Final Office Action dated April 16, 2008, page 10, lines 4-9.

Further, Comparative Example 2 of the present Specification shows the properties of a photosensitive resin composition obtained when EPIKOTE 1031S was used in place of the curing agent of the present invention.[14] Since EPIKOTE 1031S, like YDG 414 above, "has a very high absorbance at 400 nm or less (i.e., a light transmittance of 0.0% in a 0.1 weight percent methyl ethyl ketone solution),"[15] the purity of 1,1,2,2-tetrakis[(2,3-epoxypropoxy)phenyl]ethane contained in EPIKOTE 1031S is low.

Experimental results showed that "in Comparative Example 2 in which EPIKOTE 1013S, which is a commercially available epoxy compound, is used as a curing agent, tackiness, developability, resolution, and adhesiveness are inferior compared to the photosensitive resin composition of the present invention and the cured product thereof."[16] Table 2 shows that photosensitivity was also inferior.[17] Thus, the use of high-purity 1,1,2,2-tetrakis[(2,3-epoxypropoxy)phenyl]ethane as the curing agent in a photosensitive resin composition as recited in claim 1 produces superior results over those taught or suggested by Tanaka and Rowe, either alone or in combination.

At least for these reasons, Applicant respectfully submits that Tanaka in view of Rowe does not render claim 1 obvious, and respectfully requests that the rejection of claim 1 on the basis of Tanaka and Rowe be withdrawn.

Claims 4 and 7-10 depend from claim 1. Therefore, Applicant respectfully submits that at least for the same reasons as stated above for claim 1, Tanaka in view of Rowe does not render these claims obvious, and respectfully requests that the rejection of claims 4 and 7-10 on the basis of Tanaka and Rowe be withdrawn.

Claims 2, 3, 5, 11, 12, 14-19, and 21-24 have been canceled, rendering the rejection of these claims moot.

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[14] Specification of record, page 57, line 17, through page 58, line 4.

[15] Specification of record, page 40, lines 11-17.

[16] Specification of record, page 62, lines 10-15.

[17] Specification of record, page 61.

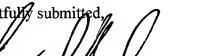
CONCLUSION

In view of the foregoing, it is believed that claims 1, 4, and 6-10 are in immediate condition for allowance and it is respectfully requested that the application be reconsidered and that all pending claims be allowed and the case passed to issue.

If there are any other issues remaining which the Examiner believes could be resolved through a Supplemental Response or an Examiner's Amendment, the Examiner is respectfully requested to contact the undersigned at the telephone number indicated below.

Dated: September 16, 2008

Respectfully submitted,

By 

Louis J. DelJudice
Registration No.: Reg. No. 47,522
DARBY & DARBY P.C.
P.O. Box 770
New York, New York 10008-0770
(212) 527-7700
(212) 527-7701 (Fax)
Attorneys/Agents For Applicant